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VI. Let  $ABC$  be  $\triangle$  right-angled at  $C$ . Produce  $AC$  to some point as  $D$ . Draw  $DF$  perpendicular to  $AB$ , produced, and meeting  $CB$ , produced.

Employing notation similar to that used in V., and proceeding somewhat in the same manner, we find that this method also yields a large number of proofs, in fact the same number that we found in V.

[To be Continued.]

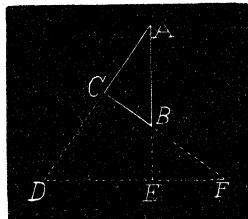


Fig. 6.

## ARITHMETIC.

Conducted by B. F. FINKEL, Springfield, Mo. All contributions to this department should be sent to him.

### SOLUTIONS OF PROBLEMS.

56. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in Irving College, Mechanicsburg, Pennsylvania.

A, B, and C can walk at the rate of  $a=3$ ,  $b=4$ , and  $c=5$  miles, per hour. They start from Washington, at  $m=1$ ,  $n=2$ , and  $p=3$  o'clock, P. M., respectively. When B overtakes A, he is ordered (by A) back to C. When will B and C meet? Suppose B had ordered A back to C, when would A and C meet? In case all three continue walking ahead, at what time will they meet?

Solution by P. S. BERG, Larimore, North Dakota.

Since B gains 1 mile in 1 hour on A, to gain 3 miles will require 3 hours, or it will be 5 o'clock and 12 miles from starting point when B and A meet. C has traveled 10 miles. Since B and C travel 9 miles in 1 hour, they will travel 2 miles in  $\frac{2}{9}$  hour, hence they will meet at  $5\frac{2}{9}$  o'clock. Since A and C travel 8 miles in 1 hour, they will travel 2 miles in  $\frac{1}{4}$  hour, hence they will meet at  $5\frac{1}{4}$  o'clock.

In case all three continue walking ahead, as stated above A and B will meet at 5 o'clock. Since C gains 2 miles on A in 1 hour, to gain 6 miles will require 3 hours. Hence they will meet at 6 o'clock. Since C gains 1 mile on B in 1 hour, to gain 4 miles will require 4 hours. Hence it will be 7 o'clock when they meet.

Also solved by B. F. YANNEY and H. C. WILKS.

57. Proposed by L. B. FRAKER, Weston, Ohio.

Suppose that in a meadow the grass is of uniform quality and growth and that 6 oxen or 10 colts could eat up 3 acres of the pasture in  $\frac{15}{16}$  of the time in which 10 oxen and 6 colts could eat up 8 acres; or that 600 sheep would require  $2\frac{1}{7}$  weeks longer than 660 sheep to eat up 9 acres.